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Plankton of the Bermuda Oceanographic Expeditions. VII. Siphonophora Taken During the Year 1931[1].

Captain A. K. Totton, M. C.
British Museum (Natural History).

Introduction.

This is one of a number of papers dealing with the planktonic contents of nets drawn at definite levels and in a definite area off the south coast of Bermuda on the Bermuda Oceanographic Expeditions of the New York Zoological Society. The area chosen was a circle eight miles in diameter, with its center located at 32° 12′ N. Lat., 64° 36′ W. Long., a point nine miles southeast of Nonsuch Island, Bermuda.[2] The depth at this locality is 1,000 to more than 1,400 fathoms. Further details concerning the nets, position, etc., will be found in Zoologica, Volume XIII, Numbers 1, 2 and 3.

Captain Totton has kindly identified the hundred-odd vials of siphonophores which I sent him, and Dr. Henry B. Bigelow and Dr. Mary Sears have furnished the faunistic notes. My own share has been only the collecting, and the gathering of the scanty field notes.

William Beebe.

Suborder Calycophorae.
Family Prayidae.
Subfamily Amphicaryoninae.
1. *Amphicaryon acaule* Chun 1888.

Material: No. 3174; Net 988; 1,000 fathoms; June 2.

Color: Lemon yellow in life.

Distribution: This species is widespread in the tropical and subtropical belts of the great oceans (for localities see Totton, 1932, p. 330). It was first described by Chun (1888) from the Canaries, but it was not taken again in that general region until 1910, when the *Thor* took it in the Bay of Cadiz (Bigelow and Sears, in press), and in 1913, when the *Hirondelle II* took it in 38° 58′ N. Lat., 44° 55′ W. Long. (Leloup, 1933). There is only one record of it in the Mediterranean, made by the *Thor*.

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[1] Contribution No. 514, Department of Tropical Research, New York Zoological Society.
[2] For diagram of trawling area, see *Zoologica*, Vol. XXI, No. 9, page 97.

Subfamily Nectopyraminae.

2. *Nectopyramis* sp. nov?

MATERIAL: No. 31942; Net 1120; 400 fathoms; Aug. 3.
No. 311087; Net 1146; 600 fathoms; Aug. 7.
No. 311652; Net 1239; 900 fathoms; Aug. 29.
No. 311767; Net 1259; 1,000 fathoms; Sept. 3.

Subfamily Prayinae.

3. ?*Praya dubia* Quoy and Gaimard 1834.

MATERIAL: No. 31509; Net 1063; 300 fathoms; July 8.
No. 311617; Net 1226; 300 fathoms; Aug. 27.

COLOR: Transparent and colorless in life.

DISTRIBUTION: Previous records of *P. dubia* are from Australian waters, from the eastern tropical Pacific (Bigelow, 1911; 1931), and off Valparaiso (Moser, 1925).

4. ?*Rosacea cymbiformis* Delle Chiaje 1842.

MATERIAL: No. 31540; Net 1064; 100 fathoms; July 9.

DISTRIBUTION: *Rosacea cymbiformis* has been recorded from all three oceans—in the eastern Atlantic from the tropics northward to the Bay of Biscay (Chun, 1888; Haeckel, 1888; Leloup, 1933), in the South Atlantic (Leloup, 1934; Hardy and Gunther, 1935), in the Philippines (Bigelow, 1919), and in the Indian Ocean (Huxley, 1859; Browne, 1926). There are also frequent records from the Mediterranean whence it was first described.

Family Hippopodiidae.

5. *Hippopodius hippopus* Forskål 1775.

MATERIAL: No. 31305; Net 1036; 200 fathoms; June 25.
No. 31445; Net 1050; 25 fathoms; July 6.
No. 31480; Net 1055; 50 fathoms; July 7.
No. 31733; Net 1089; 50 fathoms; July 18.
No. 311252; Net 1173; 400 fathoms; Aug. 14.
No. 311301; Net 1185; 900 fathoms; Aug. 15.
No. 311473; Net 1201; 800 fathoms; Aug. 19.
No. 311499; Net 1210; 1,000 fathoms; Aug. 20.
No. 311534; Net 1214; 1,000 fathoms; Aug. 21.
No. 311618; Net 1227; 400 fathoms; Aug. 27.
No. 311963; Net 1293; 800 fathoms; Sept. 12.
No. 312066; Net 1308; 100 fathoms; Sept. 16.

COLOR: Transparent and colorless.

DISTRIBUTION: This is one of the more common species found in all the warmer oceans (for summary, see Moser, 1925).

6. *Vogtia glabra* Bigelow 1918.

MATERIAL: No. 311199; Net 1169; 700 fathoms; Aug. 12.

DISTRIBUTION: This species was originally described from the Straits of Florida (Bigelow, 1918) and has since been taken in the eastern side of the temperate Atlantic between the Azores, Canaries and the coast of Portugal and the Gulf of Gascony, as well as in the Mediterranean (Leloup, 1933; Bigelow and Sears, in press). It has never been reported from other oceans, as have other members of this bathypelagic genus.

Family Diphyidae.

Subfamily Abylinae.

7. *Abyla dentata* Bigelow 1918.

MATERIAL: No. 311652; Net 1239; 900 fathoms; Aug. 29.
No. 311767; Net 1259; 1,000 fathoms; Sept. 3.

DISTRIBUTION: This species was first described from the western Atlantic between Bermuda and the American coast (Bigelow, 1918). It has only been noted since then near the Cape Verdes (Moser, 1925, as "*A. quadrata*").

8. *Abylopsis eschscholtzii* Huxley 1859.

MATERIAL: No. 311040; Net 1133; 700 fathoms; Aug. 5.
No. 311534; Net 1214; 1,000 fathoms; Aug. 21.

COLOR: Dull crimson in life.

DISTRIBUTION: This species is widespread over the tropical Pacific and Malayan region (Bedot, 1896; Lens and Van Riemsdijk, 1908; Bigelow, 1911, 1931; Totton, 1932), the Indian Ocean (Browne, 1926), in the South Atlantic (Moser, 1925; Leloup, 1934), also in the tropical Atlantic (Chun, 1888; Mayer, 1900; Leloup, 1934). It has also been taken in the Mediterranean (Leloup, 1933).

9. *Abylopsis tetragona* Otto 1823.

MATERIAL: No. 31883; Net 1107; 400 fathoms; July 27.

DISTRIBUTION: This is one of the commoner species of siphonophores and is found throughout the warmer zones of all oceans (see Moser, 1925).

Subfamily Ceratocymbinae.

10. *Ceratocymba sagittata* Quoy and Gaimard 1827.

MATERIAL: No. 31517; Net 1062; 300 fathoms; July 8.
No. 31920; Net 1117; 1,000 fathoms; July 29.
No. 311250; Net 1174; 500 fathoms; Aug. 14.
No. 311724; Net 1248; 600 fathoms; Sept. 1.
No. 312031; Net 1305; 500 fathoms; Sept. 15.
No. 312067; Net 1308; 100 fathoms; Sept. 16.
No. 312071; Net 1308; 100 fathoms; Sept. 16.
No. 312079; Net 1309; 100 fathoms; Sept. 16.
No. 312169; Net 1322; 300 fathoms; Sept. 18.
No. 312171; Net 1322; 300 fathoms; Sept. 18.
No. 312182; Net 1330; 1,000 fathoms; Sept. 19.

COLOR: Transparent anteriorly; milky white posteriorly.

DISTRIBUTION: This species occurs in the warm parts of the North and South Atlantic (Moser, 1925; Leloup, 1933; 1934), the eastern tropical Pacific (Bigelow, 1911), the Indian Ocean (Browne, 1926), and the Malayan region (Lens and Van Riemsdijk, 1908), and in the Mediterranean, where it was taken for the first time by the *Thor* (Bigelow and Sears, in press).

Subfamily Diphyinae.

11. *Diphyes dispar* Chamisso and Eysenhardt 1821.

MATERIAL: No. 31258; Net 1020; 14 fathoms; June 15.
No. 31304; Net 1035; 100 fathoms; June 25.
No. 31356; Net 1037; 300 fathoms; June 25.
No. 31364; Net 1040; 25 fathoms; June 26.

No. 31409; Net 1045; 25 fathoms; June 27.
No. 31435; Net 1050; 25 fathoms; July 6.
No. 31481; Net 1055; 50 fathoms; July 7.
No. 31507; Net 1055; 50 fathoms; July 7.
No. 31484; Net 1056; 50 fathoms; July 7.
No. 31517; Net 1069; 50 fathoms; July 10.
No. 31598; Net 1069; 50 fathoms; July 10.
No. 31621; Net 1075; 50 fathoms; July 11.
No. 31643; Net 1075; 50 fathoms; July 11.
No. 31650; Net 1079; 50 fathoms; July 14.
No. 31732; Net 1089; 50 fathoms; July 18.
No. 31787; Net 1099; 900 fathoms; July 24.
No. 311211; Net 1169; 700 fathoms; Aug. 12.
No. 311496; Net 1206; 800 fathoms; Aug. 20.
No. 311571; Net 1218; 700 fathoms; Aug. 24.
No. 311625; Net 1230; 900 fathoms; Aug. 27.
No. 312005; Net 1285; 800 fathoms; Sept. 10.
No. 312030; Net 1301; 50 fathoms; Sept. 15.

COLOR: All transparent and colorless except No. 31650, which is described as "siphonophore with long yellow chain."

DISTRIBUTION: This species has been recorded from the warm zones of all oceans.

12. *Chelophyes appendiculata* Eschscholtz 1829.

MATERIAL: No. 311122; Net 1154; 700 fathoms; Aug. 8.
No. 312071; Net 1308; 100 fathoms; Sept. 16.

DISTRIBUTION: This is the commonest of all siphonophores, and is found in all oceans.

13. *Chelophyes contorta* Lens and Van Riemsdijk 1908.

MATERIAL: No. 311534; Net 1214; 1,000 fathoms; Aug. 21.

DISTRIBUTION: This species, first described from the Malayan region, has subsequently been found in the Indian Ocean (Moser, 1925; Browne, 1926), on both sides of the Pacific, off the Great Barrier Reef of Australia (Totton, 1932), in the China Sea (Bigelow, 1913), in the eastern tropical Pacific (Bigelow, 1911), and also in the South Atlantic (Moser, 1925).

14. *Eudoxoides mitra* Huxley 1859.

MATERIAL: No. 311199; Net 1169; 700 fathoms; Aug. 12.

DISTRIBUTION: This species, first described from the Indian Ocean, is well known in the Pacific (Totton, 1932; Bigelow, 1911, 1913), and in the Atlantic (Moser, 1925; Leloup, 1933, 1934; Bigelow, 1918).

15. *Eudoxoides spiralis* Bigelow 1911.

MATERIAL: No. 311534; Net 1214; 1,000 fathoms; Aug. 21.

DISTRIBUTION: This species is cosmopolitan in warm seas; the records include the eastern tropical Pacific (Bigelow, 1911), Japanese waters (Bigelow, 1913), off the Great Barrier Reef of Australia (Totton, 1932), the Indian Ocean (Browne, 1926), many localities in the South Atlantic, south to Latitude 45° S. (Moser, 1925; Leloup, 1934); likewise the tropical and subtropical North Atlantic, northward to the vicinity of the Cape Verdes (Leloup, 1934) on the one side and in the region of Cape Hatteras, Bermuda and the Bahamas (Bigelow, 1918) on the other. It has also been taken in the Mediterranean.

16. *Lensia conoidea* Keferstein and Ehlers 1860.

MATERIAL: No. 3174; Net 988; 1,000 fathoms; June 2.
No. 311816; Net 1263; 800 fathoms; Sept. 4.

COLOR: Lemon yellow in life.

DISTRIBUTION: Since *L. fowleri* and *L. subtiloides* have often been treated as synonyms of *L. conoidea*, it is impossible to learn its range from published accounts. There are definite records of it from the North Pacific, the Malayan region, the Gulf Stream, and the coast of Norway. It is likely that it occurred among the specimens listed as *"truncata"* from the South Atlantic (Moser, 1925; Leloup, 1934; Hardy and Gunther, 1935), and in the Mediterranean (Moser, 1925; Leloup, 1933). It was taken in the latter sea in abundance by the *Thor* (Bigelow and Sears, in press).

17. *Lensia multicristata* Moser 1925.

MATERIAL: No. 311415; Net 1195; 800 fathoms; Aug. 17.
No. 311780; Net 1258; 900 fathoms; Sept. 3.

DISTRIBUTION: *Lensia multicristata* Moser is widespread in the eastern tropical Pacific (Bigelow, 1911), in the Indian Ocean (Browne, 1926), in the South Atlantic (Moser, 1925; Leloup, 1934), and as far north in the North Atlantic as the Bay of Biscay (Bigelow, 1911a), as well as in the Mediterranean (Bigelow and Sears, in press).

18. *Lensia profunda* sp. nov.[3]

MATERIAL: No. 311377; Net 1190; 900 fathoms; Aug. 16.
No. 311601; Net 1217; 600 fathoms; Aug. 24.

19. *Lensia* sp.

MATERIAL: No. 311534; Net 1214; 1,000 fathoms; Aug. 21.

20. *?Chuniphyes multidentata* Lens and Van Riemsdijk 1908.

MATERIAL: No. 311199; Net 1169; 700 fathoms; Aug. 12.
No. 311510; Net 1207; 900 fathoms; Aug. 20.
No. 311968; Net 1291; 600 fathoms; Sept. 12.
No. 312008; Net 1298; 800 fathoms; Sept. 14.

COLOR: Transparent and colorless in life.

DISTRIBUTION: The bathypelagic species, *C. multidentata*, was first described from Malayan waters. Later, it has been recorded from the eastern tropical Pacific (Bigelow, 1911, 1931), the offing of California (Bigelow and Leslie, 1930), the Eastern Sea between Japan and China (Bigelow, 1913), near the Philippines (Bigelow, 1919), and on both sides of the Atlantic—south to South Georgia, and north to the Bay of Biscay (Bigelow, 1911a; Moser, 1925; Leloup, 1933, 1934; Hardy and Gunther, 1935). There is only one record of it within the Mediterranean (Leloup, 1933).

Suborder Physophorae.
Family Forskalidae.
21. *Forskalia* sp.

MATERIAL: No. 3110; Net 980; Surface; May 17.
No. 311300; Net 1185; 900 fathoms; Aug. 15.

[3] See MS. *Discovery* Report.

No. 311301; Net 1185; 900 fathoms; Aug. 15.
No. 311511; Net 1207; 900 fathoms; Aug. 20.

COLOR: No. 31[illegible]0 was described as "lemon-colored," No. 311300 as "orange-red," and No. 311511 as "black-lined."

Family Agalmidae.

22. *Agalma elegans* Sars 1846.

MATERIAL: No. 31492; Net 1054; 25 fathoms; July 7.
No. 312117; Net 1314; 600 fathoms; Sept. 7.

COLOR: Transparent and colorless.

DISTRIBUTION: This species is well known from the Mediterranean, from the coasts of Europe as far north as Norway and along the eastern coast of North America from Cape Cod to the West Indies, and in the eastern tropical Pacific (Bigelow, 1911), as well as in Malayan waters (Bedot, 1896) and the Indian Ocean (Browne, 1926).

23. *Agalma okeni* Eschscholtz 1825.

MATERIAL: No. 31210; Net 1018; 900 fathoms; June 15.
No. 31314; Net 1038; 300 fathoms; June 25.
No. 31976; Net 1128; 400 fathoms; Aug. 4.
No. 311616; Net 1226; 300 fathoms; Aug. 27.
No. 312068; Net 1308; 100 fathoms; Sept. 16.
No. 312071; Net 1308; 100 fathoms; Sept 16.
No. 312085; Net 1310; 300 fathoms; Sept. 16.
No. 312088; Net 1311; 300 fathoms; Sept. 16.
No. 312170; Net 1322; 300 fathoms; Sept. 18.

COLOR: Nectophores transparent, siphosomes coral and white in life.

DISTRIBUTION: This species occurs in the warmer regions of all the great oceans and has occasionally been taken in the Mediterranean and Red Sea.

24. *Stephanomia amphitridis* Péron and Lesueur 1807.

MATERIAL: No. 3152; Net 984; 600 fathoms; June 2.
No. 3153; Net 984; 600 fathoms; June 2.
No. 311013; Net 1133; 700 fathoms; Aug. 5.
No. 311040; Net 1133; 700 fathoms; Aug. 5.
No. 311091; Net 1143; 500 fathoms; Aug. 7.
No. 311092; Net 1143; 500 fathoms; Aug. 7.
No. 311112; Net 1149; 500 fathoms; Aug. 8.
No. 311534; Net 1214; 1,000 fathoms; Aug. 21.
No. 311859; Net 1274; 900 fathoms; Sept. 7.
No. 312196; Net 1326; 600 fathoms; Sept. 19.

COLOR: Varying from crimson to pink and orange.

DISTRIBUTION: This species, originally described from the Atlantic, has also been recorded from the Pacific, the Malayan region and probably from Ceylon.

Subfamily Nectaliinae.

25. *Nectalia loligo* Haeckel 1888.

MATERIAL: No. 311040; Net 1133; 700 fathoms; Aug. 5.
No. 311113; Net 1149; 500 fathoms; Aug. 8.

No. 311494; Net 1205; 700 fathoms; Aug. 20.
No. 311570; Net 1218; 700 fathoms; Aug. 24.
No. 311571; Net 1218; 700 fathoms; Aug. 24.
No. 311673; Net 1236; 600 fathoms; Aug. 29.
No. 311688; Net 1243; 700 fathoms; Aug. 31.
No. 311968; Net 1291; 600 fathoms; Sept. 12.
No. 311984; Net 1291; 600 fathoms; Sept. 12.
No. 311964; Net 1292; 700 fathoms; Sept. 12.
No. 311966; Net 1292; 700 fathoms; Sept. 12.

COLOR: Crimson and transparent.

DISTRIBUTION: Few specimens of this species are on record. The type came from the Canary Islands and subsequent records are two specimens taken by the Plankton Expedition in 3° 6′ N. Lat., 33° 2′ W. Long., and the northern border of the Gulf Stream south of Iceland, one from Orotava, one from the eastern tropical Pacific, and from the South Atlantic (Moser, 1925).

Subfamily Anthophysidae.

26. *Anthophysa formosa* Fewkes 1882.

MATERIAL: No. 311187; Net 1162; 800 fathoms; Aug. 11.
No. 311281; Net 1178; 900 fathoms; Aug. 14.
No. 311367; Net 1188; 500 fathoms; Aug. 16.
No. 312205; Net 1325; 500 fathoms; Sept. 19.

COLOR: Lemon yellow and white.

DISTRIBUTION: This is the member of this genus found in the Atlantic, and may eventually prove to be identical with *A. rosea* Brandt. It is known from the Gulf Stream in the western side of the North Atlantic, from the Sargasso Sea, from the South Atlantic, where it was taken by the *Challenger,* from the vicinity of the Canaries and from the Mediterranean.

27. *Athorybia rosacea* (Forskål 1775) Eschscholtz 1829.

MATERIAL: No. 311008; Net 1136; 1,000 fathoms; Aug. 5.

28. *Athorybia* sp.

MATERIAL: No. 312071; Net 1308; 100 fathoms; Sept. 16.

Suborder Rhizophysaliae.

Family Rhizophysidae.

29. *Rhizophysa* sp.

MATERIAL: No. 31719; Net 1084; 25 fathoms; July 15.
COLOR: Pink.

Family Physalidae.

30. *Physalia physalis* Linné 1758.

MATERIAL: Often taken at the surface.

DISTRIBUTION: This is the common Portuguese-man-of-war of the warmer parts of the Atlantic Ocean.

Suborder Chondrophorae.

Family Porpitidae.

31. *Porpita umbella* O. F. Müller 1776.

MATERIAL: Occasionally taken at the surface.

DISTRIBUTION: This species is the one found in the warm waters of the Atlantic Ocean. It may prove to be the same as *P. porpita* Linné from the Indian Ocean, but it is probably distinct from *P. pacifica* Lesson.

Family Velellidae.

32. *Velella velella* Linné 1775.

MATERIAL: Occasionally taken at the surface.

DISTRIBUTION: This species is found in the warmer waters of the Atlantic and Pacific. On further study, it may prove identical with the *Velella* of the Indian Ocean.

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